

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method comprising:
detecting a failure of a first link, wherein
said first link is coupled between a first port of a network element and an
upstream portion of a communications network, and
said first link comprises a first part of a communications channel
between said upstream portion of said communications
network and a downstream portion of said communications
network;
in response to said detecting said failure of said first link, ~~maintaining a~~
~~communications channel between said downstream portion of said~~
~~communications network and said upstream portion of said~~
~~communications network by~~ disabling a second port of said network
element ~~coupled to~~ , wherein
a second link is coupled between said second port of said network
element and ~~[[a]]~~ said downstream portion of said communications
network, and
said second link comprises a second part of said communications
channel; and
in response to detecting a recovery of said first link, ~~maintaining said~~
~~communications channel between said downstream portion of said~~
~~communications network and said upstream portion of said~~
~~communications network by~~ re-enabling said second port of said
network element ~~coupled to~~ ; and
in response to said re-enabling said second port, said communications
channel failing back to said first link and said second link ~~between said~~
~~network element and said downstream portion of said~~
~~communications network.~~

2. (Original) The method of claim 1, wherein said downstream portion of said communications network comprises a redundantly-linked network element.
3. (Original) The method of claim 2, wherein said redundantly-linked network element comprises a protocol stack including a first protocol stack layer and a second protocol stack layer, said first protocol stack layer is associated with one or more applications, and said disabling comprises notifying said second protocol stack layer of said failure.
4. (Original) The method of claim 3, wherein said network element comprises a primary network element, said method further comprises enabling a third link between said redundantly-linked network element and a secondary network element, and said secondary network element is coupled to said upstream portion of said communications network using a fourth link.
5. (Original) The method of claim 2, wherein said redundantly-linked network element comprises a multi-homed endstation.
6. (Original) The method of claim 2, wherein said network element comprises a datalink layer network element.
7. **(Currently Amended)** The method of claim ~~[[2]]~~ 1, wherein said **second** port is not re-enabled, if said **second** port is configured to remain disabled in response to said detecting said recovery of said first link.
8. (Original) The method of claim 2, wherein said upstream portion of said communications network comprises a network layer network element.

9. (Currently Amended) The method of claim [[2]] 1, wherein said disabling said second port further comprises:

disabling a plurality of links between said network element and a plurality of redundantly-linked network elements, wherein said downstream portion of said communications network comprises said plurality of redundantly-linked network elements.

10. (Currently Amended) The method of claim [[2]] 1, wherein said disabling said second port further comprises:

disabling a link of a plurality of links between said network element and a plurality of redundantly-linked network elements, wherein said downstream portion of said communications network comprises said plurality of redundantly-linked network elements.

11.-12. (Cancelled)

13. (Currently Amended) The method of claim [[2]] 1, wherein said disabling said second port further comprises:

disabling said second port of said network element ~~coupled to said second link between said network element and said downstream portion of said communications network~~ within a period of time substantially less than or equal to 50 milliseconds of said detecting said failure of said first link.

14. (Currently Amended) The method of claim [[2]] 1, wherein said disabling said second port further comprises:

disabling said second port of said network element ~~coupled to said second link between said network element and said downstream portion of said communications network~~ within a period of time substantially less than or equal to 2 seconds of said detecting said failure of said first link.

15. (Currently Amended) An apparatus comprising:
means for detecting a failure of a first link, wherein
said first link is **coupled** between **a first port of** a network element and an
upstream portion of a communications network, **and**
said first link comprises a first part of a communications channel
between said upstream portion of said communications
network and a downstream portion of said communications
network ;
means for detecting a recovery of said first link; **and**
~~means for maintaining a communications channel between said downstream~~
~~portion of said communications network and said upstream portion of~~
~~said communications network, wherein said means for maintaining~~
~~comprises~~
means for disabling a **second** port of said network element ~~**coupled to a second**~~
~~**link between said network element and a downstream portion of said**~~
~~**communications network,**~~ in response to **said means for** detecting said
failure of said first link, **wherein**
a second link is coupled between said second port of said network
element and said downstream portion of said communications
network, and
said second link comprises a second part of said communications
channel;
means for re-enabling said **second** port of said network element ~~**coupled to said**~~
~~**second link between said network element and said downstream**~~
~~**portion of said communications network,**~~ in response to **said means for**
detecting said recovery of said first link; **and**
means for said communications channel failing back to said first link and
said second link, in response to said means for re-enabling said second
port.

16. (Original) The apparatus of claim 15, wherein
said downstream portion of said communications network comprises a
redundantly-linked network element.
17. (Original) The apparatus of claim 16, wherein
said redundantly-linked network element comprises a protocol stack including a
first protocol stack layer and a second protocol stack layer,
said first protocol stack layer is associated with one or more applications, and
said means for disabling comprises means for notifying said second protocol stack
layer of said failure.
18. (Original) The apparatus of claim 17, wherein
said network element comprises a primary network element,
said apparatus further comprises means for enabling a third link between said
redundantly-linked network element and a secondary network element,
and
said secondary network element is coupled to said upstream portion of said
communications network using a fourth link.
19. (Original) The apparatus of claim 16, wherein said redundantly-linked network
element comprises a multi-homed endstation.
20. (Currently Amended) The apparatus of claim ~~[[16]]~~ **15**, wherein said means for
disabling **said second port further** comprises:
means for disabling a link of a plurality of links between said network element
and a plurality of redundantly-linked network elements, **wherein said
downstream portion of said communications network comprises said
plurality of redundantly-linked network elements.**
- 21.-22. (Cancelled)

23. (Currently Amended) The apparatus of claim ~~[[16]]~~ 15, wherein said means for disabling said second port further comprises:

means for disabling said second port of said network element ~~coupled to said second link between said network element and said downstream portion of said communications network~~ within a period of time substantially less than or equal to 50 milliseconds of said means for detecting said failure .

24. (Currently Amended) The apparatus of claim ~~[[16]]~~ 15, wherein said means for disabling said second port further comprises:

means for disabling said second port of said network element ~~coupled to said second link between said network element and said downstream portion of said communications network~~ within a period of time substantially less than or equal to 2 seconds of said means for detecting said failure.

25. (Currently Amended) A machine-readable non-transitory storage medium having a plurality of instructions executable by a machine embodied therein, wherein said plurality of instructions when executed cause said machine to perform a method comprising:

detecting a failure of a first link, wherein

said first link is coupled between a first port of a network element and an upstream portion of a communications network, and
said first link comprises a first part of a communications channel between said upstream portion of said communications network and a downstream portion of said communications network;

in response to said detecting said failure of said first link, ~~maintaining a communications channel between said downstream portion of said communications network and said upstream portion of said~~

~~communications network by~~ disabling a second port of said network element ~~coupled to said~~ , wherein
a second link is coupled between said second port of said network element and ~~[[a]]~~ said downstream portion of said communications network, and
said second link comprises a second part of said communications channel; and

in response to detecting a recovery of said first link, ~~maintaining said~~
~~communications channel between said downstream portion of said~~
~~communications network and said upstream portion of said~~
~~communications network by~~ re-enabling said second port of said network element ~~coupled to~~ ; and
in response to said re-enabling said second port, said communications channel failing back to said first link and said second link ~~between said~~
~~network element and said downstream portion of said~~
~~communications network.~~

26. (Previously Presented) The machine-readable non-transitory storage medium of claim 25, wherein

said downstream portion of said communications network comprises a redundantly-linked network element.

27. (Previously Presented) The machine-readable non-transitory storage medium of claim 26, wherein

said redundantly-linked network element comprises a protocol stack including a first protocol stack layer and a second protocol stack layer,
said first protocol stack layer is associated with one or more applications, and
said disabling comprises notifying said second protocol stack layer of said failure.

28. (Previously Presented) The machine-readable non-transitory storage medium of claim 27, wherein

said network element comprises a primary network element,
said method further comprises enabling a third link between said redundantly-linked network element and a secondary network element, and
said secondary network element is coupled to said upstream portion of said communications network using a fourth link.

29. (Previously Presented) The machine-readable non-transitory storage medium of claim 26, wherein said redundantly-linked network element comprises a multi-homed endstation.

30. (Currently Amended) The machine-readable non-transitory storage medium of claim ~~[[26]]~~ **25**, wherein said disabling **said second port further** comprises:

disabling a link of a plurality of links between said network element and a plurality of redundantly-linked network elements, **wherein said downstream portion of said communications network comprises said plurality of redundantly-linked network elements.**

31.-32. (Cancelled)

33. (Currently Amended) The machine-readable non-transitory storage medium of claim ~~[[26]]~~ **25**, wherein said disabling **said second port further** comprises:

disabling said **second** port of said network element ~~**coupled to said second link between said network element and said downstream portion of said communications network**~~ within a period of time substantially less than or equal to 50 milliseconds of said detecting **said failure of said first link.**

34. (Currently Amended) The machine-readable non-transitory storage medium of claim ~~[[26]]~~ **25**, wherein said disabling **said second port further** comprises:

disabling said **second** port of said network element ~~**coupled to said second link between said network element and said downstream portion of said**~~

~~communications network~~ within a period of time substantially less than or equal to 2 seconds of said detecting said failure of said first link.

35. (Currently Amended) A data processing system comprising:
a redundantly-linked endstation; and
a network element configured to
detect a failure of a first link, wherein
said first link is coupled between a first port of said network element and an upstream portion of a communications network, and
said first link comprises a first part of a communications channel between said upstream portion of said communications network and said redundantly-linked endstation,
in response to ~~detecting~~ detection of said failure of said first link,
~~maintain a communications channel between said redundantly-linked endstation and said upstream portion of said communications network by disabling~~ disable a second port of said network element ~~coupled to said~~ , wherein
a second link is coupled between said second port of said network element and said redundantly-linked endstation, and
said second link comprises a second part of said communications channel,
in response to ~~detecting~~ detection of a recovery of said first link,
~~maintain said communications channel between said redundantly-linked endstation and said upstream portion of said communications network by re-enabling~~ re-enable said second port of said network element ~~coupled to~~ , and
in response to re-enabled said second port, fail back said communications channel to said first link and said second link

~~between said network element and said redundantly-linked endstation.~~

36. (Original) The data processing system of claim 35, wherein said network element comprises a primary network element, said redundantly-linked endstation is configured to enable a third link between said redundantly-linked endstation and a secondary network element, and said secondary network element is coupled to said upstream portion of said communications network using a fourth link.
37. (Original) The data processing system of claim 35, wherein said network element comprises an Ethernet switch.
38. (Currently Amended) A data processing system comprising:
~~a redundantly-linked endstation;~~
a primary network element, wherein
a first port of said primary network element is coupled to an upstream portion of a communications network using a first link,
a second port of said primary network element is coupled to ~~[[said]]~~ a redundantly-linked endstation using a second link,
said first link comprises a first part of a communications channel between said upstream portion of said communications channel and said redundantly-linked endstation,
said second link comprises a second part of said communications channel, and
said primary network element is configured to detect a failure of said first link, and
disable ~~[[a]]~~ said second port of said primary network element coupled to said second link ~~to maintain a communications channel between said redundantly-linked endstation and said upstream portion of said~~

~~communications network~~ in response to ~~detecting~~
detection of said failure of said first link,
re-enable said second port of said primary network element
coupled to said second link ~~to maintain a~~
~~communications channel between said redundantly-~~
~~linked endstation and said upstream portion of said~~
~~communications network~~ in response to ~~detecting~~
detection of a recovery of said first link; and
~~a secondary network element, wherein~~
~~said secondary network element is coupled to said redundantly-linked~~
~~endstation using a third link~~
said redundantly-linked endstation, wherein
said redundantly-linked endstation is configured to fail back to said
communications channel comprising said second link in
response to re-enabled said second port, and
said primary network device is configured to fail back to said
communications channel comprising said first link, in response
to re-enabled said second port.

39. (Currently Amended) The data processing system of claim 38 ~~, wherein~~
further comprising:

a secondary network element, wherein
said secondary network element is coupled to said redundantly-linked
endstation using a third link,
said redundantly-linked endstation is configured to enable said third link,
in response to disabled said second port, and
said secondary network element is coupled to said upstream portion of
said communications network using a fourth link, and
said redundantly-linked endstation is configured to fail over to
another communications channel comprising said third link
and said fourth link, in response to disabled said second port.

40. (Original) The data processing system of claim 38, wherein said primary network element comprises an Ethernet switch.
41. (Currently Amended) The method of claim 1, wherein said second link is ~~a downstream link that is individually~~ predetermined ~~by~~, using a configuration interface, to be automatically disabled in response to said detecting said failure of said first link.
42. (Currently Amended) The apparatus of claim 15, wherein said second link is ~~a downstream link that is individually~~ predetermined ~~by~~, using a configuration interface, to be automatically disabled in response to said detecting said failure of said first.
43. (Currently Amended) The machine-readable non-transitory storage medium of claim 25, wherein said second link is ~~a downstream link that is individually~~ predetermined ~~by~~, using a configuration interface, to be automatically disabled in response to said detecting said failure of said first.
44. (Currently Amended) The data processing system of claim 35, wherein said second link is ~~a downstream link that is individually~~ predetermined ~~by~~, using a configuration interface, to be automatically disabled in response to said detecting said failure of said first.
45. (Currently Amended) The data processing system of claim 38, wherein said second link is ~~a downstream link that is individually~~ predetermined ~~by~~, using a configuration interface, to be automatically disabled in response to said detecting said failure of said first.
- 46.-50. (Cancelled)

51. (Currently Amended) The method of claim 1, wherein said disabling said second port further comprises:

~~disabling said port of said network element coupled to said second link~~
determining, on-demand upon said detecting said failure of said first link, that said second port should be disabled, in response to analyzing a plurality of system attributes.

52. (Currently Amended) The apparatus of claim 15, wherein said means for disabling said second port further comprises:

means for ~~disabling said port of said network element coupled to said second link~~
determining, on-demand upon said means for detecting said failure of said first link, that said second port should be disabled, in response to analyzing a plurality of system attributes.

53. (Currently Amended) The machine-readable non-transitory storage medium of claim 25, wherein said disabling said second port further comprises:

~~disabling said port of said network element coupled to said second link~~
determining, on-demand upon said detecting said failure of said first link, that said second port should be disabled, in response to analyzing a plurality of system attributes.

54. (Currently Amended) The data processing system of claim 35, wherein said network element is further configured to:

~~disable said port of said network element coupled to said second link~~
determine, on-demand upon detection of said failure of said first link, that said second port should be disabled, in response to an analysis of a plurality of system attributes.

55. (Currently Amended) The data processing system of claim 38, wherein said primary network element is further configured to:

~~disable said port of said primary network element coupled to said second link~~ **determine**, on-demand **upon detection of said failure of said first link, that the second port should be disabled**, in response to an analysis of a plurality of system attributes.

56. (Previously Presented) The method of claim 2, further comprising:
said redundantly-linked network element failing back to said second link when
said first link and said second link become operational again.

57. (Previously Presented) The apparatus of claim 16, further comprising:
means for failing back said redundantly-linked network element to said second
link when said first link and said second link become operational again.

58. (Previously Presented) The machine-readable storage medium of claim 26,
wherein said method further comprises:
said redundantly-linked network element failing back to said second link when
said first link and said second link become operational again.

59. (Previously Presented) The data processing system of claim 35, wherein said redundantly-linked endstation is configured to fail back to said second link when said first link and said second link become operational again.

60. (Previously Presented) The data processing system of claim 38, wherein said redundantly-linked endstation is configured to fail back to said second link when said first link and said second link become operational again.

61. (Currently Amended) The method of claim 1, wherein
said detecting said failure of said first link further comprises
detecting a bandwidth of the first link falling below a predetermined
threshold;
said first link is associated with a virtual network;
said second link is associated with said virtual network; and
said **second** port of said network element is disabled as a result of
said **second** port being associated with said virtual network, and
a bandwidth, between the upstream portion of the communications
network and the network element, falling below a
predetermined threshold as a result of the said failure of [[the]]
said first link.
62. (Currently Amended) The apparatus of claim 15, wherein
said means for detecting said failure of said first link further comprises
means for detecting a bandwidth of the first link falling below a
predetermined threshold;
said first link is associated with a virtual network;
said second link is associated with said virtual network; and
said **second** port of said network element is disabled as a result of
said **second** port being associated with said virtual network, and
a bandwidth, between the upstream portion of the communications
network and the network element, falling below a
predetermined threshold as a result of the said failure of the
first link.

63. (Currently Amended) The machine-readable non-transitory storage medium of claim 25, wherein

said detecting said failure of said first link further comprises
detecting a bandwidth of the first link falling below a predetermined
threshold;

said first link is associated with a virtual network;

said second link is associated with said virtual network; and

said **second** port of said network element is disabled as a result of

said **second** port being associated with said virtual network, and

a bandwidth, between the upstream portion of the communications
network and the network element, falling below a
predetermined threshold as a result of the said failure of the
first link.

64. (Currently Amended) The data processing system of claim 35, wherein

said network element is further configured to
detect a bandwidth of the first link falling below a predetermined
threshold as detection of said failure of said first link;

said first link is associated with a virtual network;

said second link is associated with said virtual network;

said **second** port of said network element is disabled as a result of

said **second** port being associated with said virtual network, and

a bandwidth, between the upstream portion of the communications
network and the network element, falling below a
predetermined threshold as a result of the said failure of the
first link.

65. (Currently Amended) The data processing system of claim 38, wherein said network element is further configured to
detect a bandwidth of the first link falling below a predetermined
threshold as detection of said failure of said first link;
said first link is associated with a virtual network;
said second link is associated with said virtual network; and
said second port of said primary network element is disabled as a result of
said second port being associated with said virtual network, and
~~a bandwidth, between the upstream portion of the communications~~
~~network and the network element, failing below a~~
~~predetermined threshold as a result of the said~~ failure of the
first link.
66. (Currently Amended) The method of claim 1, wherein
said second port of said network element is directly connected to said second link
between said network element and said downstream portion of said
communications network.